## Material Composition Declaration Sheet <MCD>

MICROCHIP

**MCHP Package Code : 6ZC**

**Package Type : 1467 BBGA 40x40x4.03mm SAC**

| Material Name | Material Type/Grade | Material Weight (mg) | Material Percentage (%) | Chemical Ingredient | CAS No. | % Chemical in Material | % Chemical in Product | Chemical Mass in Product (mg) | PPM |
|---|---|---|---|---|---|---|---|---|---|
| Die | Silicon Die | **329.64** | 1.47 | Silicon | 7440-21-3 | 100.00 | 1.4692 | 329.6400 | 14692 |
| Substrate | | **6634.96** | 29.57 | | | | | | |
| | Solder Mask | 83.46 | | Epoxy Resin | Propietary | 0.6667 | 0.1972 | 44.2360 | 1972 |
| | | | | Barium Sulfate | 7727-43-7 | 0.2264 | 0.0670 | 15.0230 | 670 |
| | | | | Silica | 60676-86-0 | 0.1132 | 0.0335 | 7.5118 | 335 |
| | | | | Acetate | 112-15-2 | 0.2516 | 0.0744 | 16.6920 | 744 |
| | Bump Pad SOP | 28.12 | | Tin | 7440-31-5 | 0.4090 | 0.1209 | 27.1350 | 1209 |
| | | | | Silver | 7440-22-8 | 0.0127 | 0.0038 | 0.8435 | 38 |
| | | | | Copper | 7440-50-8 | 0.0021 | 0.0006 | 0.1410 | 6 |
| | Laminate | 2436.45 | | Fibre Glass | 65997-17-3 | 9.0261 | 2.6691 | 598.8800 | 26691 |
| | | | | Copper | 7440-50-8 | 16.2308 | 4.7996 | 1076.9100 | 47996 |
| | | | | Epoxy | Propietary | 11.4644 | 3.3902 | 760.6600 | 33902 |
| | ABF | 643.39 | | Silica | 7631-86-9 | 6.3033 | 1.8640 | 418.2200 | 18640 |
| | | | | Naphthalene | 27610-48-6 | 0.4849 | 0.1434 | 32.1700 | 1434 |
| | | | | Epoxy Resin | Propietary | 2.9088 | 0.8602 | 193.0000 | 8602 |
| | Copper Foil | 3439.43 | | Copper | 7440-50-8 | 51.8380 | 15.3291 | 3439.4300 | 153291 |
| | Foil Plating | 4.11 | | Tin | 7440-31-5 | 0.0620 | 0.0183 | 4.1110 | 183 |
| Die Underbump | SnAg | **19.35** | 0.09 | Tin | 7440-31-5 | 98.2014 | 0.0847 | 19.0000 | 847 |
| | | | | Silver | 7440-22-4 | 1.7986 | 0.0016 | 0.3480 | 16 |
| Underfill | Epoxy | **34.00** | 0.15 | Bis F Epoxy Resin | 9003-36-5 | 21.0000 | 0.0318 | 7.1400 | 318 |
| | | | | Amine Hardener | Proprietary | 9.0000 | 0.0136 | 3.0600 | 136 |
| | | | | Silicon Dioxide | 60676-86-0 | 68.0000 | 0.1030 | 23.1200 | 1030 |
| | | | | Carbon Black | 1333-86-4 | 2.0000 | 0.0030 | 0.6800 | 30 |
| Solder Ball | SAC305 | **1336.00** | 5.95 | Tin | 7440-31-5 | 96.5000 | 5.7460 | 1289.2400 | 57460 |
| | | | | Silver | 7440-22-4 | 3.0000 | 0.1786 | 40.0800 | 1786 |
| | | | | Copper | 7440-50-8 | 0.5000 | 0.0298 | 6.6800 | 298 |
| SMD Capacitor | | **9.68** | 0.04 | | | | | | |
| | Ceramic Element | 5.11 | | Barium Oxide | 1304-28-5 | 31.6616 | 0.0137 | 3.0650 | 137 |
| | | | | Titanium Dioxide | 13463-67-7 | 15.8360 | 0.0068 | 1.5330 | 68 |
| | | | | Proprietary Material | Proprietary | 5.2787 | 0.0023 | 0.5110 | 23 |
| | Outer Plating | 1.46 | | Copper | 7440-50-8 | 15.1025 | 0.0065 | 1.4620 | 65 |
| | Electrode | 0.16 | | Diboron Trioxide | 1303-86-2 | 0.3357 | 0.0001 | 0.0325 | 1 |
| | | | | Silicon Dioxide | 7631-86-9 | 1.3429 | 0.0006 | 0.1300 | 6 |
| | Plating | 2.95 | | Tin | 7440-31-5 | 2.7788 | 0.0012 | 0.2690 | 12 |
| | | | | Nickel | 7440-02-0 | 27.6639 | 0.0119 | 2.6780 | 119 |
| SMD Solder | SAC | **15.25** | 0.07 | | | | | | |
| | | | | Tin | 7440-31-5 | 96.5043 | 0.0656 | 14.7200 | 656 |
| | | | | Silver | 7440-22-4 | 2.9961 | 0.0020 | 0.4570 | 20 |
| | | | | Copper | 7440-50-8 | 0.4996 | 0.0003 | 0.0762 | 3 |
| Heatspreader | | **14058.40** | 62.66 | | | | | | |
| | HS Core | 13580.19 | | Copper | 7440-50-8 | 96.5984 | 60.5251 | 13580.1900 | 605251 |
| | HS Plating | 348.21 | | Nickel | 7440-02-0 | 2.4769 | 1.5519 | 348.2100 | 15519 |
| | Thermal Paste | 60.00 | | Aluminum | 7429-90-5 | 0.2988 | 0.1872 | 42.0000 | 1872 |
| | | | | Silicone | Propietary | 0.0427 | 0.0267 | 6.0000 | 267 |
| | | | | Zinc Oxide | 1314-13-2 | 0.0854 | 0.0535 | 12.0000 | 535 |
| | HS Adhesive | 70.00 | | Methyltrimethoxysilane Treated Aluminum Oxide | Propietary | 0.4232 | 0.2652 | 59.5000 | 2652 |
| | | | | Dimethyl Siloxane | 68083-19-2 | 0.0747 | 0.0468 | 10.5000 | 468 |
| **Total** (PKG Weight, mg) | | **22437.29** | **100.00** | | | | **100.00** | **22437.29** | **1000000** |

**This semiconductor device and its homogenous materials comply with EU Directives: 2002/95/EC (27 January 2003) & Directive 2011/65/EU (08 June 2011) and 2015/863/EU (31 March 2015) and 2000/53/EC and 2016/774/EU (End-of-Life Vehicles (ELV) without exemption (zero)**

**Compliance with the above EU Directives has been verified via internal design controls, supplier declarations, and /or analytical test data.**

**If a chemical substance is absent from the list above, the chemical substance is NOT an intentional ingredient in the semiconductor device and, to the best of Microchip Technology Incorporated's knowledge and belief as of the date of this document, there is no credible reason to believe that the unavoidable impurity concentration of the chemical substance, if any, is not below the threshold of regulatory concern for any regulatory scheme world-wide.**

**Molding compounds used by Microchip meet the UL94 V0 flammability standard for plastics. You can access the UL iQTM family of databases to obtain a test report at http://iq.ul.com/plastics/**

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**Assembled package referenced above is EU REACH compliant based on the latest SVHC candidate list of ECHA which can be found at http://echa.europa.eu/web/guest/candidate-list-table**